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10/800,012	03/15/2004	Philip J. Lingle	3691.663	6810
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NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER BLACKWELL RUDASIL, GWENDOLYN A	
			ART UNIT	PAPER NUMBER
			1775	
DATE MAILED: 09/07/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/800,012

Applicant(s)

LINGLE ET AL.

Examiner

Gwendolyn Blackwell

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/04, 7/04, 8/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

1. Claims 1-31 are pending and examined on the merits.
2. The limitations regarding the low sheet resistance in combination with the visible transmission as set forth in independent claims 1, 15, 22, and 29 will receive the benefit of the March 15, 2004 filing date.

### *Double Patenting*

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13, 16-24, 27, and 29 of copending Application No. 10/787,823. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claims are encompassed by claims 1-21 of the present application. Because the structure of the copending claims is encompassed by those of the present application, it would be expected that those physical properties claimed would also be present.

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5. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6. Claims 1-21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-40 of copending Application No. 10/797,561. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claims are encompassed by claims 1-21 of the present application. Because the structure of the copending claims are encompassed by those of the present application, it would be expected that those physical properties claimed would also be present.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claims 1-31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-34 of copending Application No. 10/797,580. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claims are encompassed by claims 1-31 of the present application. Because the structure of the copending claims are encompassed by those of the present application, it would be expected that those physical properties claimed would also be present.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102/103***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

*(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.*

*(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-31 are rejected under 35 U.S.C. 102(a) as being anticipated by or in the alternative under 35 U.S.C. 103(a) over United States Patent Application Publication no. 2004/0005467, Neuman et al.

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*Applicant's claims 1, 15, 22, and 29*

Applicant's claim 1 requires the following heat treated layer structure:

glass substrate/silicon nitride/zinc oxide/Ag/silicon nitride/zinc oxide/Ag/Ni and/or Cr  
oxide/dielectric

wherein the first layer of silicon nitride is located on and directly contacts a surface of the glass substrate, the first Ag layer is located over and contacting the zinc oxide, the second Ag layer is located over and contacting the second layer comprising zinc oxide, the Ni and/or Cr oxide is located over and contacting the second Ag layer with the article having a sheet resistance of less than or equal to 2.5 and a visible transmission of 79%.

Applicant's claim 15 requires the following heat treated layer structure:

glass substrate/1<sup>st</sup> dielectric/1<sup>st</sup> IR reflecting/2<sup>nd</sup> dielectric/2<sup>nd</sup> IR reflecting/3<sup>rd</sup> dielectric

wherein the coated article has a sheet resistance of less than or equal to 2.5 and a visible transmission of at least 78%.

Applicant's claim 22 has the same layer structure as set forth for claim 1. However, instead of being a generic coated article the claim is drawn to the layer structure being used in a laminated a vehicle windshield with a sheet resistance of less than or equal to 3.0 and a visible transmission of at least 76.0%.

Applicant's claim 29 has the same layer structure as set forth for claim 15. However, instead of being a generic coated article the claim is drawn to the layer structure being used in a laminated a vehicle windshield with a sheet resistance of less than or equal to 2.5 and a visible transmission of at least 77.0%.

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*Regarding claims 1-2, 15, 17, and 23*

Neuman et al disclose a heat treatable coated article with zinc oxide inclusive contact layers. The heat treated coated article can be part of windows or laminated windshields, (page 3, section 0027). The multilayered coating is comprised of:

silicon nitride/1<sup>st</sup> lower contact layer/IR reflecting layer/1<sup>st</sup> upper contact layer/dielectric layer/silicon nitride/2<sup>nd</sup> lower contact layer/IR reflecting layer/2<sup>nd</sup> upper contact layer/dielectric layer/protective dielectric layer

wherein the lower contact layer is a zinc oxide inclusive layer, the IR reflecting layer is comprised of silver, and the upper contact layer is an oxide of NiCr, (page 4, sections 0034-0038). Monolithically the sheet resistance after heat treatment is less than or equal to 2.5 ohms/square with a corresponding visible transmission of 85% which is calculate from  $T_{vis}/R_s=34$ , (page 5, Table 3), meeting the requirements of claims 1-2, 15, and 17.

Because Neuman et al disclose that the coated invention can be used with a laminated windshield and that the only type of substrate used with the Neuman et al invention is based on glass, and well known in the art that these particular types of coatings are placed between two substrates when laminated, that laminated windshield disclosed on page 3, section 0027 is considered to be comprised of two glass substrates with the coating formed therebetween, meeting the requirements of claims 23 and 29.

In the alternative, while there are no specific examples without the use of titanium oxide next to the glass substrate, it would have been within the skill of one in the art at the time of invention to leave out the titanium oxide layer as it is considered an optional layer, (page 4, section 0034).

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*Regarding claims 3, 16, and 24*

The limitation of present claims 3, 16, and 23 require that the sheet resistance is less than or equal to 2.1 which falls within the range of less than or equal to 2.5 set forth above. In the alternative, it would have been within the skill of one in the art at the time of invention to optimize the sheet resistance of the coated article in order to increase the visible transmission to sheet resistance through the use of Si-rich silicon nitride inclusive layer used in combination with a zinc oxide inclusive layer to lower the sheet resistance. By increasing the ratio the solar performance and visible transmission of the coated article are increased, (page 3, sections 0026 and 0029-0031), meeting the requirements of claims 3, 16, and 24.

*Regarding claims 4-5, 7, 18, 20, 25-27, and 30-31*

Post heat treatment the coated substrate has a haze value of less than or equal to 0.35, (page 6, Table 6), meeting the requirements of claims 4-5, 18, 25-26 and 30-31. The silicon nitride layers can be silicon rich and non-stoichiometric represented by  $\text{Si}_x\text{N}_y$  wherein  $x/y$  may be from 0.76-1.5, (page 4m section 0040), meeting the requirements of claims 7, 20, and 27.

*Regarding claims 6 and 19*

The limitations of present claims 6 and 19 require that the haze value is less than or equal to 0.30 which falls within the range of less than or equal to 0.35 as set forth above. Absent a showing of criticality with respect to the haze value (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the haze value through routine experimentation in order to achieve a coated article which has the required optical characteristics, such as a high visible light transmission. It has been held that discovering



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an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

*Regarding claims 8-12, 21, and 28*

Tin oxide with an overcoat of silicon nitride is formed over the 2<sup>nd</sup> upper contact layer, (page 4, section 0042), meeting the requirements of claim 8. Tin oxide can also be located between the 1<sup>st</sup> IR reflecting layer and the second layer comprising silicon nitride, (page 4, section 0041), meeting the requirements of claims 9 and 28. An oxide of Ni and/or Cr acts as the 1<sup>st</sup> and 2<sup>nd</sup> upper contact layers, (page 4, section 0037), meeting the requirements of claim 10. The silicon and zinc targets are doped with about 10% aluminum, which results in silicon nitride inclusive and zinc oxide inclusive layers containing aluminum, (page 7, section 0064), meeting the requirements of claims 11-12. The IR reflecting layers are formed on the lower contact layers which are comprised of zinc oxide, (page 4, sections 0034 and 0038), meeting the requirements of claim 21.

*Regarding claims 13 and 14*

The layer comprised of an oxide of NiCr ranges in thickness from 10-100 angstroms with the second silicon nitride layer is comprised of 50-450 angstroms, (page 5, Table 1), meeting the requirements of claims 13-14.

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12. Claims 15-19, 21, and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by or in the alternative under 35 U.S.C. 103(a) over United States Patent no. 6,472,072, Ebisawa et al.

*Applicant's claims 15 and 29*

The limitations of claims 15 and 29 have been set forth above.

*Regarding claims 15-18, 29, and 31*

Ebisawa et al disclose a glazing panel for incorporation in a laminated vehicle windscreen, (column 7, lines 34-36), having the following layer structure:

	Reference number	Geometrical thickness	Atomic ratios
Glass substrate	10	2 mm	
Base dielectric comprising:	11		
AlSiN <sub>y</sub>	12	85 Å	Si/Al = 0.9
ZnAlO <sub>x</sub>	13	240 Å	Al/Zn = 0.1
Ag	15	100 Å	
ZnAl overlying barrier	16	10 Å	Al/Zn = 0.1
Central dielectric comprising			
ZnAlO <sub>x</sub>	17	600 Å	Al/Zn = 0.1
Ag	19	115 Å	
ZnAl overlying barrier	20	15 Å	Al/Zn = 0.1
Top dielectric comprising:			
ZnAlO <sub>x</sub>	22	150 Å	Al/Zn = 0.1
AlSiN <sub>y</sub>	23	80 Å	Si/Al = 0.9

wherein the visible transmission post heat treatment is 77% with a haze value of 0.21, (columns 8-9, lines 33-15). When the structure recited in the reference is substantially identical to that of the claims, the claimed properties or function are presumed inherent. *MPEP 2112.01*. Because the prior art exemplifies Applicant's claimed multilayered coating structure, the claimed physical properties relating to sheet resistance of the coated substrate are inherently present in the prior

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art. Absent an evidentiary showing to the contrary, the addition of the claimed physical properties to the claim language fails to provide patentable distinction over the prior art of record, meeting the requirement of claims 29 and 31.

The limitations of presents claims 15 and 30 require that the visible transmission is at least 78% and 77.5%, respectively, which falls within the of 70-80%, (column 3, lines 12-18). Absent a showing of criticality with respect to the visible transmission (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the visible transmission of the laminate through routine experimentation in order to achieve a coated article which has the required optical characteristics. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), meeting the requirements of claims 15-17.

*Regarding claims 18-19 and 21*

The haze value preferably does not exceed 0.30, (column 3, lines 30-34), meeting the requirements of claims 18-19. From the layer structure set forth above, the Ag layers are contacting the layers comprised of zinc oxide, (column 7, lines 33-55), meeting the requirements of claim 21.

13. Claims 15-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over United States Patent Application Publication no. 2002/0102352, Hartig et al.

*Applicant's claim 15*

The limitations of claim 15 have been set forth above.

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*Regarding claims 15 and 21*

Hartig et al disclose a heat treatable haze resistance transparent stack formed on a glass substrate wherein the transparent stacks is comprised of the following layer structure:

inner dielectric/1<sup>st</sup> IR reflecting/intermediate dielectric/2<sup>nd</sup> IR reflecting/outer dielectric

wherein the intermediate dielectric layer is comprised of a plurality of dielectric layers, (pages 1-2, sections 0009-0012). Table 1 demonstrates examples of the coating stack:

LAYER	SAMPLE A	SAMPLE B	SAMPLE C	SAMPLE D
Zn+	65 Å	66 Å	65 Å	84 Å
ZnO	57 Å	56.7 Å	45 Å	43 Å
Ag	63.7 Å	66.3 Å	74 Å	73 Å
Nb	15.3 Å	15 Å	16.2 Å	17 Å
Zn+	74 Å	73 Å	107 Å	93 Å
Si3N4	135 Å	135 Å	118 Å	118 Å
Zn+	197 Å	206 Å	191 Å	189 Å
Si3N4	139 Å	133 Å	124 Å	122 Å
Zn+	29 Å	31 Å	57 Å	64 Å
ZnO	61 Å	62 Å	62 Å	51 Å

LAYER	SAMPLE A	SAMPLE B	SAMPLE C	SAMPLE D
Ag	143 Å	140.4 Å	168 Å	148 Å
Nb	15.9 Å	15 Å	16.8 Å	16 Å
Zn+	83 Å	84 Å	105 Å	108 Å
Si3N4	45 Å	24 Å	38 Å	34 Å
TiN	13.3 Å	14.1 Å	15 Å	14 Å
Si3N4	152 Å	176 Å	155 Å	156 Å

wherein Table 2 demonstrates the optical characteristics of achievable through the use of such films as well as the placement of the Ag layers on the zinc oxide layers, (page 5, sections 0037-0039). Because the layer structure meets the limitations of claim 15, it would be expected that the physical property limitation regarding the sheet resistance would also be present (see MPEP 2112.01), meeting the requirements of claims 15 and 21:

TABLE 2			
Color Parameter	Pre-temper	Post-temper	Change
T (%)	71.4	78.7	+7.3
T <sub>a</sub>	-2.3	-2.2	+0.1
T <sub>b</sub>	5.1	3.6	-1.5
T <sub>740</sub>	55.8	57.4	+1.6
R <sub>a</sub>	5.9	5.6	-0.3
R <sub>ab</sub>	1.6	0	-1.6
R <sub>gb</sub>	-6.6	-3.8	+2.8
R <sub>f</sub> (%)	4.8	5.2	+0.4
R <sub>n</sub>	-1.7	-3.6	-0.9
R <sub>n</sub>	5.3	5.1	-0.2
Resistance (Ω/square)	3.9	2.5	-1.4

*Regarding claims 16-17*

The limitations of claims 16 and 17 require a visible transmission of at least 79% and at least 80% respectively. Hartig et al disclose that it is known in the art to have a pair of spaced apart silver layers with dielectric materials positioned beneath, between and above the silver layer. Such a configuration is sold by PPG with the following optical characteristics, (page 6, section 0041). Because the layer structure meets the limitations of claim 15, it would be expected that the physical property limitation regarding the sheet resistance would also be present (see MPEP 2112.01), meeting the requirements of claims 16 and 17:

TABLE 2			
Color Parameter	Pre-temper	Post-temper	Change
T (%)	71.4	78.7	+7.3
T <sub>a</sub>	-2.3	-2.2	+0.1
T <sub>b</sub>	5.1	3.6	-1.5
T <sub>740</sub>	55.8	57.4	+1.6
R <sub>a</sub>	5.9	5.6	-0.3
R <sub>gs</sub>	1.6	0	-1.6
R <sub>gb</sub>	-6.6	-3.8	+2.8
R <sub>f</sub> (%)	4.8	5.2	+0.4
R <sub>h</sub>	-2.7	-3.6	-0.9
R <sub>h</sub>	5.3	5.1	-0.2
Resistance ( $\Omega$ /square)	3.9	2.5	-1.4

*Regarding claims 18-20*

The haze value for the examples set forth in Tables 1 and 2, is 0.22, (page 5, section 0040), meeting the requirements of claims 18-19.

*Regarding claim 20*

The limitations of claim 20 requires that x/y (silicon/nitrogen) ratio ranges from 0.8-1.4. For the layers containing silicon nitride, the layer can be non-stoichiometric such that the ratio of silicon to nitrogen is greater than  $\frac{3}{4}$  (0.75), which can include the range of 0.8-1.4. In the alternative, absent a showing of criticality with respect to the x/y ratio (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the ratio of silicon to nitrogen through routine experimentation in order to significantly reduce haze related to high temperature treatment, (page 4, section 0028). It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), meeting the requirements of claims 15-17.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn Blackwell whose telephone number is (571) 272-1533. The examiner can normally be reached on Monday - Thursday; 5:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gwendolyn Blackwell  
Examiner  
Art Unit 1775



gab



DEBORAH JONES  
SUPERVISORY PATENT EXAMINER